

Clemson University

**TigerPrints**

---

Bobbin and Beaker

Engineering, Computing and Applied Sciences,  
College of

---

1964

## The Bobbin and Beaker Vol. 21 No. 4

Clemson University

Follow this and additional works at: [https://tigerprints.clemson.edu/spec\\_bobbin](https://tigerprints.clemson.edu/spec_bobbin)

Materials in this collection may be protected by copyright law (Title 17, U.S. code). Use of these materials beyond the exceptions provided for in the Fair Use and Educational Use clauses of the U.S. Copyright Law may violate federal law.

For additional rights information, please contact Kirstin O'Keefe (kokeefe [at] clemson [dot] edu)

For additional information about the collections, please contact the Special Collections and Archives by phone at 864.656.3031 or via email at cuscl [at] clemson [dot] edu

---

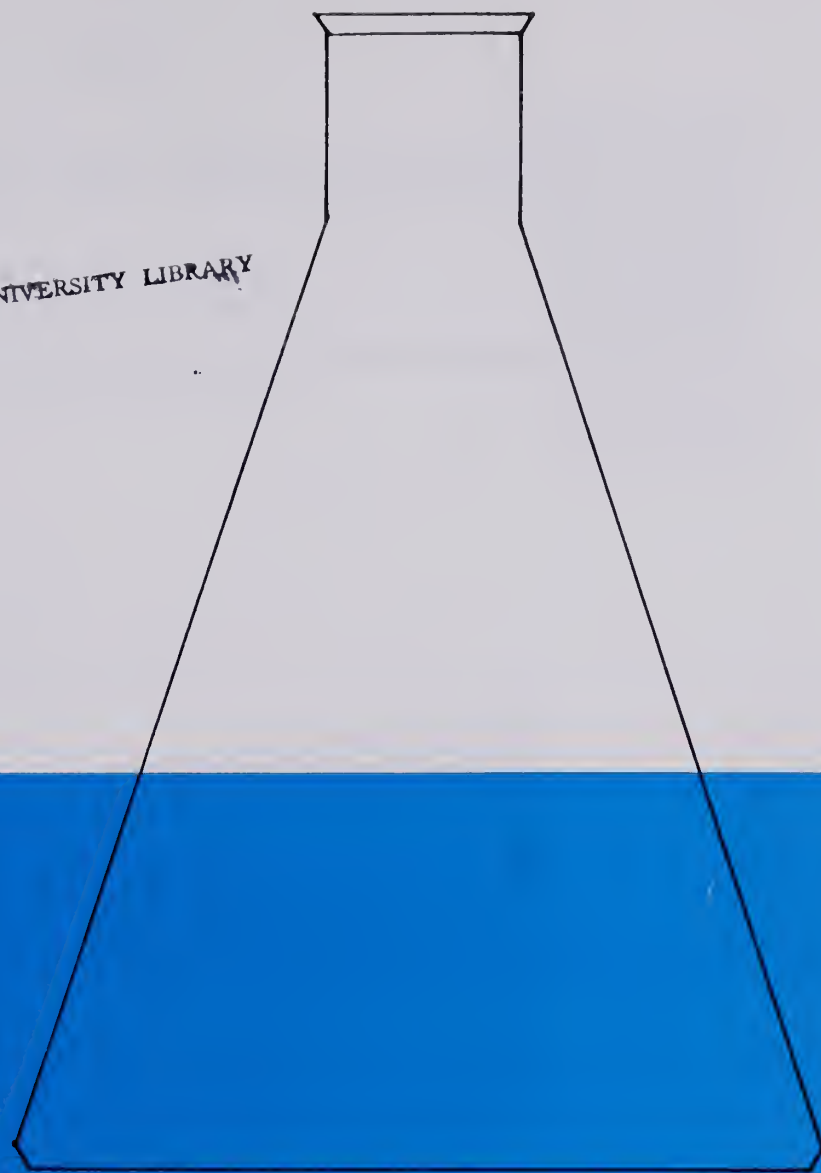
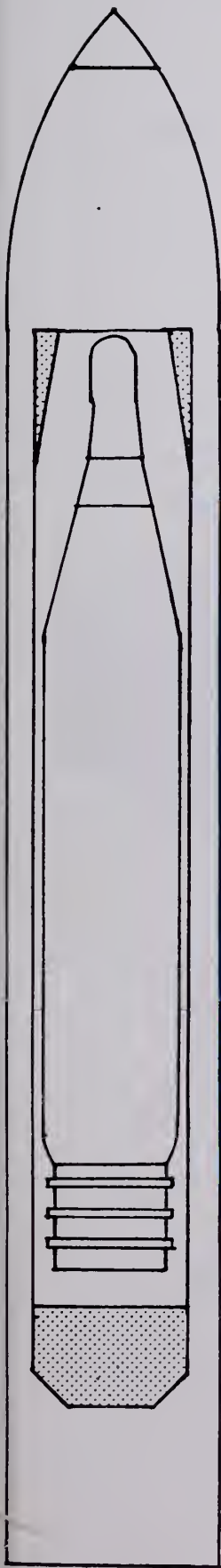
### Recommended Citation

University, Clemson, "The Bobbin and Beaker Vol. 21 No. 4" (1964). *Bobbin and Beaker*. 207.  
[https://tigerprints.clemson.edu/spec\\_bobbin/207](https://tigerprints.clemson.edu/spec_bobbin/207)

This Book is brought to you for free and open access by the Engineering, Computing and Applied Sciences, College of at TigerPrints. It has been accepted for inclusion in Bobbin and Beaker by an authorized administrator of TigerPrints. For more information, please contact [kokeefe@clemson.edu](mailto:kokeefe@clemson.edu).

**SUMMER 1964**

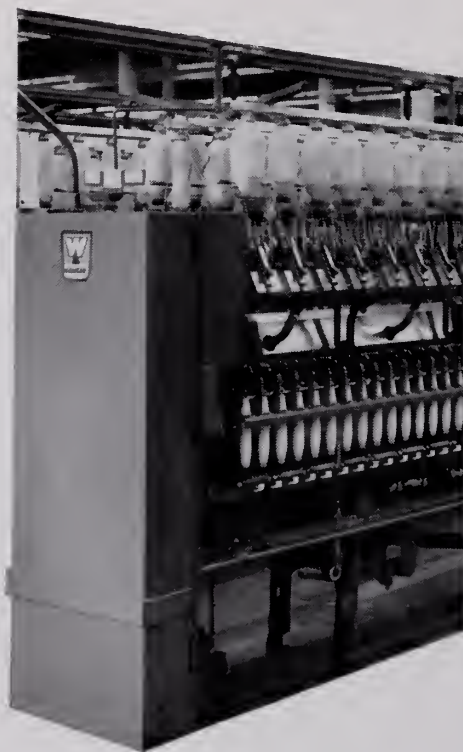
CLEMSON UNIVERSITY LIBRARY



**Bobbin & Beaker**

# W

herever man turns fibers into yarn..



Whitin manufactures a complete line of modern, efficient, high-production equipment for the processing of cottons, wools, worsteds, synthetics and blends. Whitin's world-wide reputation for producing the very finest in textile machinery is built upon more than 130 years of experience in the field. Regardless of its preparatory function, each Whitin machine will do its specific job better, faster or more economically than that job has ever been done before. Each will show unmistakable evidence of the advanced research, engineering and craftsmanship which are inherent in all machinery made by Whitin.



*Established 1831*



**Whitin**  
THE BEST WAY TO BETTER YARNS

WHITIN MACHINE WORKS: CHARLOTTE, N. C. • GREENSBORO, N. C. • ATLANTA, GA. • SPARTANBURG, S. C. • WHITINSVILLE, MASS.  
WHITIN INTERNATIONAL LTD.: PRINCIPAL OFFICE: SAN JUAN, P. R., BOX 3187 • U. S. A. OFFICE: WHITINSVILLE, MASS.

Official Student Publication  
Clemson School of Industrial Management and Textile Science

## The Staff

Henry M. Poston  
Johnsonville, S. C.

Bruce R. Edwards  
Tryon, N. C.

W. Wesley Connelly  
Spartanburg, S. C.

Marshall White  
Rock Hill, S. C.

Sanders E. Goodman  
Salisbury, N. C.

Roy T. Ivester  
Greenville, S. C.

\* \* \* \*

## Faculty Advisers

Wallace D. Trevillian, Dean

## In This Issue

From the Editor .....	5
Mathematics and Management .....	6
AATT Activities .....	10
The Need for Expanded Textile Research .....	11
Outstanding Seniors .....	12
Textile Chemistry Honor Students .....	14
Phi Psi News Notes .....	15
Professor Lindsay Retires .....	16
The Industrial Management Society .....	18
SAM Hi-Lights .....	19
A Year with AATCC .....	20

**The BOBBIN & BEAKER.** Organized in November, 1939, by Iota Chapter of Phi Psi Fraternity, and published and distributed without charge four times during the school year by students of the Clemson College School of Industrial Management and Textile Science. All rights reserved.

Address: The Bobbin and Beaker, School of Industrial Management and Textile Science, Clemson College, Clemson, South Carolina.

POLICY—

The views and opinions expressed in all guest articles are those of the writers themselves, and must not be construed to necessarily represent the views and opinions of the Editors of this magazine or of the faculty of the Clemson College School of Industrial Management and Textile Science. No article in **BOBBIN & BEAKER**, or any part thereof shall be reproduced in any form without permission of the editor. Requests may be forwarded to Editor, **THE BOBBIN & BEAKER**, School of Industrial Management and Textile Science, Clemson, South Carolina.

**THE BOBBIN & BEAKER** is a non-profit magazine organized to serve Clemson students and the textile industry. We ask our readers to consider favorably our advertisers when buying.



# Special TEXTILE DICTIONARY for BEST RESULTS in Textile Processing



## C

### Corobex (Kôr 'a-bex)

A durable anti-bacterial additive for textiles. Provides fixed, lasting protection against germs, mildew, perspiration odors and other odors of bacterial origin.

Easily applied during dyeing or finishing operations. Will cause no shade change in dyed and printed colors, no yellowing of whites. Does not affect the hand of the finished goods. Compatible with most types of finishing materials.

## D

### Discolite\* (dĩs/kõ.lĩte)

Concentrated sodium sulphoxylate formaldehyde available in lump, pea, rice or powder form.

A powerful reducing agent, stable at high temperatures. Widely used to effect reduction and solution of vat colors, and for discharge effects when applied to colored grounds. Effective when mixed with vat colors and discharge pastes wherever the reducing agent must retain its reducing power after being dried into the fabric.

### Dispersall (dĩs.pũr/sal)

A long chain ethylene oxide condensate in the form of a colorless, neutral, somewhat viscous liquid. Fully resistant to hard water, and miscible with water in all proportions. A retardant and leveling assistant in vat dyeing.

Used widely as a dispersing agent in dyeing synthetic fibers with disperse colors and for fast color salts and bases in Napthol dyeing and printing.

Effective in stripping to prevent redeposition of the color on stripped goods.

## N

### Neofinish (Ne/.O.Finish)

Non-Ionic softener dispersible in hot water, suitable for all textile fibres, both natural and synthetic. Compatible with all types of finishing materials, including resin finishes. No development of color or odor in goods finished with Neofinish, even in storage. No yellowing at time of application.

### Neowet (nẽ/õ.wět)

Complex Polyethylene Ether in the form of a pale yellow, slightly viscous liquid.

A non-ionic surface active wetting agent, effective at all temperatures. Completely compatible with enzymatic desizing agents and readily soluble in water. Contains 33 1/3% active ingredients. Widely used in scouring all types of textile fabrics and for general wetting purposes.

### Neowet X (nẽ/õ.wět)

Organic Ether Sulphonate in the form of a water white slightly viscous liquid.

An anionic surface active wetting agent, effective at all temperatures. Does not affect enzyme activity in desizing. Compatible with hydrogen peroxide and resin finishes. High detergent value. Contains 20% active ingredients.

### Neozymes\* (nẽ/õ.zĩms)

Desizing agents made up of amylolytic, proteolytic and fat splitting enzymes available in the form of crystalline powder or liquid concentrate for high or low temperature requirements.

Neozymes quickly remove all trace of starch glue or gelatin sizing without danger of damage to even the most delicate fabrics. For best results, use with NEOWET to speed saturation.

## P

### Parolite\* (pār/õ.lĩte)

Zinc sulphoxylate formaldehyde in the form of white crystalline powder. A highly concentrated stripping agent for all forms of wool and modern synthetics.

Completely soluble in water. Leaves stripped goods soft, completely free of zinc dust and in most receptive condition for further processing. Often completely strips goods where other stripping agents fail. Very effective in discharge printing on acetate rayon.

## V

### Vatrolite\* (vāt/rõ.lĩte)

Concentrated sodium hydrosulphite in the form of white crystalline powder. A powerful reducing agent for vat colors, ideal for dry feeding because of its free flowing, dustless character. Completely soluble in water.

Effective stripping agent for direct, sulphur and vat colors on cellulosic fabrics.

Quickly removes rust stains from cotton goods. May be stored indefinitely.

Available with optical whites and in buffered formulas for high temperature use without excessive alkalinity.

### Velvo Softener (ve1/võ)

A highly sulphonated tallow in the form of a creamy white paste, easily dispersed in water. Used in general finishing of all types of textile fabrics. Will not "smoke off" or change color in high temperature operations such as calendaring or drying. Has no effect on light fastness of colors.

Strategically placed warehouses plus company owned trucks add up to fast dependable delivery, every time.



# Royce



CHEMICAL COMPANY  
EAST RUTHERFORD, NEW JERSEY



# from the Editor

With this issue, a new staff takes over the Bobbin and Beaker. It is our aim to publish a magazine that will be enjoyable to all of our readers. The Bobbin and Beaker is primarily a student publication, but this does not limit our articles to those written by students only. As students we can qualify to write on general terms so we must look toward the industry to furnish material that will be interesting for our readers. We are open for suggestions at all times so let us know the type of material you want to read. We want our magazine to be second to none.

Henry M. Poston, a textile management major, from Johnsonville, South Carolina, heads up the

new staff. The new Advertising Manager will be Wesley Connelly, a textile management major from Spartanburg, South Carolina. Marshall White, a textile major from Rock Hill, South Carolina will serve as Circulation Manager. The Managing Editor will be Bruce Edwards, a textile chemistry major from Tryon, North Carolina.

To date the circulation list entails some 2700 readers. We feel proud of the fact that there exists so much interest in our student magazine and we hope that this number will continue to increase.

— Henry M. Poston

Seated: Henry M. Poston, Editor; Wesley Connelly, Advertising Manager.  
Standing: Bruce Edwards, Managing Editor; Marshall White, Circulation Manager.





# Mathematics and Management

By Dr. C. H. Whitehurst, Jr.

---

Dr. Whitehurst received his B.S. (Int'l Affairs) Florida State University in 1957; his M.A. Degree (Economics) from Florida State University in 1958 and his Ph.D. (Economics) from the University of Virginia in 1962.

He served in the Merchant Marine, World II; U. S. Army, Korean War; and is in the U. S. Naval Reserve (presently LT ready reserve).

Dr. Whitehurst is a member of the following organizations: Southern Ec. Assoc.; American Ec. Assoc.; Econometric Society; Institute of Electrical and Electronic Engineers; American Assoc. for Adv. of Science; S. C. Academy of Science; and U. S. Naval Institute.

---

LUCY: How are you doing in school these days, Charlie Brown?

CHARLIE BROWN: Oh, fairly well, I guess . . . I'm having most of my trouble in arithmetic.

LUCY: I should think you'd like arithmetic. It's a very precise subject.

CHARLIE BROWN: That's just the trouble. I'm at my best in something where the answers are mostly a matter of opinion.<sup>1</sup>

The attitudes evidenced by the following discussion between the chief characters in the comic strip "Peanuts", is undoubtedly shared by a vast majority of today's college freshman classes.

The roots of this distaste for mathematics reach deep. And without question the public elementary and secondary school systems of the nation must accept a large measure of responsibility. The freshly scrubbed, new first grader does not leave home with a foreboding of arithmetic;—something to be avoided at any cost. In all too many cases it is a **conditioned response**. Yet this is precisely the attitude with which university faculties must contend twelve years later.

To many of those whose responsibility it is to cope with this fear-induced rationale (on the part of college students) Admiral Rickover's criticism of mathematics teaching in the public schools has not been unduly harsh.

---

<sup>1</sup>Peanuts, copyright 1959, by United Feature Syndicate



## Clemson's Industrial Management Curriculum

In September of 1964 entering freshmen who have elected Industrial Management as their college major will note, perhaps with some trepidation, that their first year of college work is identical to that of the engineering student. Of particular significance and interest is the fact that the **first course** in mathematics for which credit will be given is Math 106 (Analytic Geometry and Calculus I)<sup>2</sup>.

Further along in the curriculum the new student will find statistics and such math-oriented courses ("precise subjects" as LUCY would say) as econometrics, quality control, production, planning & control, and managerial economics. And at this point he might reasonably feel entitled to some explanation . . . for the prominence given mathematics and quantitative management and economic courses.

That is what this article is . . . an explanation. Chiefly to the student, but also his family and future employer.

### Past

Without belaboring the point of what business education in American colleges and universities was in the recent past; suffice to say it was found lacking<sup>3</sup> . . . this essay will deal, at least in part, with what it is . . . at Clemson, how it got that way, and where it is going.

In 1955 Dr. Wallace D. Trevillian, now Dean of the School of Industrial Management and Textile Science, was given the assignment of devising a curriculum that would adequately prepare South Carolina's young men for positions of managerial responsibility in their own state, the Southeast and Nation. His approach was to cut superficiality to the bone, and instead, through judicious choosing, to blend many of the already existing excellent courses in mathematics, English, engineering, accounting and economics into a new curriculum . . . Industrial Management.

Never seen were such abominations as Business Mathematics and Business English. Even a cursory examination of the 1956 **Clemson College Record** shows that there was to be no compromise with mediocrity.

### Present

Where we have been is a matter of record. How a department decides which courses shall constitute its curriculum is yet another matter. Perhaps this can best be understood if the reader will put himself into "faculty shoes" for a moment. Preferably those of the Department Chairman. Before him are 144 semester hours of academic studies, representing four college years and a large monetary outlay by the student, his parents and the State of South Carolina. Yet in the final analysis he and his faculty must decide upon the courses which will make up the department's curriculum.

A partial list of considerations would include:

1. Accreditation—the curriculum must be judged and pass judgement by its peers.
2. Professional preparation—the curriculum must prepare a student to succeed in his chosen field. Employers will not long return to hire the poorly trained.
3. The curriculum must be **respected** on its own campus . . . by faculty and students alike.<sup>4</sup>

4. The curriculum must be competitive in content with other colleges and universities. It is a disgrace of the first magnitude for a good and conscientious student to strive and excell (in a poor curriculum) only to find that the "outside" world would consider his achievement for naught.
5. The curriculum must be of sufficient depth and excellence to give the superior undergraduate student a reasonable chance of being accepted by the nation's **best** graduate schools. This is a minimal requirement.<sup>5</sup>

The above list is not exhaustive. Much more could be said.

It might also be noted, however, that each of the above considerations must be maximized within a budget constraint.

Returning to mathematics and industrial management.

If mathematics (and math-oriented courses) had begun to trickle into business and management curriculums in the 1950's, the first three years of the 'sixties figuratively saw the flood gates open. By 1961 the great majority of the nation's business curriculums were striving to reach Clemson's 1955 departure point. And it was in 1961 that the Industrial Management Department reviewed its mathematics requirements and found them wanting. The following year Math 200 (introduction to Calculus) was made mandatory for all department majors.

In 1960 the industrial management student had been introduced to formal logic in his introductory course in management. Fully one third of this course is now devoted to the subject. Syllogisms, deductive and inductive arguments and reasoning and the meta language of the logician are accepted as routine.

Given a calculus base, courses in such areas as econometrics and operations research could now be planned and faculty sought to teach them.<sup>6</sup>

Introduction to Econometrics become a required course in the I.M. curriculum in September of 1964.

Last year when the Engineering School revised its Freshman mathematics requirements, the Department of Industrial Management did likewise. It was not in any sense a case of "follow the leader." The department really had no choice. In 1962 and '63 the "quantitative stem" of management training had further broadened. Courses and curriculums at schools with which Clemson's IM Department wished to be identified had greatly expanded their offerings in these areas. For most if not all calculus was a prerequisite.



At this point the prospective student (and his parents) might reasonably ask that a case be made for such a heavy dose of mathematics (and logic) on their own merits . . . not necessarily what other institutions are and are not doing. It is a fair question and I believe the industrial management faculty would answer it in this fashion.

First. Training in mathematics brings preciseness and clarity to thought and communication. While it is not argued or even desirable that the mind must work like a computer, equally to be avoided is "fuzzy" thinking and speech.

Second. Mathematics can make the **abstract** manageable. Brilliantly conceived ideas must be reduced to manageable portions before they can be examined and applied. This is no less true in the case of the industrial manager.

Third. Mathematics can (and should) be in the least a limited **common language** between the industrial manager and the physical scientist and engineer. The mix (or non-isolation) of manager, engineer and scientist is complete in a growing number of corporations and government departments.

#### A Final Word: The Future

In this short essay a case for increased mathematics in the industrial management curriculum has been made. Unfortunately, perhaps, for those like CHARLIE BROWN who are at their best in matters of opinion, the arguments and rhetoric of this article will not decide the issue. In essence the decision was foreordained as our industrial society increases its complexity at an exponential rate.

But also . . . and mark this well. While mathematics as an important direct and indirect tool of the industrial manager is here to stay, **it is not the only tool**. By definition, industrial management is a broadly based curriculum. For the **real value** for the industrial manager lies in the many facets of his education. Economics, engineering, communications, accounting and industrial management courses themselves are equally important. And the IM student can with absolute certainty expect these to be made more rigorous, upgraded and expanded as the demands of our industrial society change.

Perhaps the only thing certain about the IM curriculum is that it will not remain fixed. "SUBJECT TO CHANGE" might well be stamped across its 144 hours. In a decade which will see space flight to the moon and beyond . . . any other labeling would be a farce.

<sup>2</sup>This is in accordance with tentative recommendations by the Mathematical Association of America for undergraduate programs of students in the biological, management and social sciences.

<sup>3</sup>For specific evaluation and criticism see R. A. Gordan and J. E. Howell, **Higher Education for Business** (New York: Columbia University Press, 1959); F. C. Pierson, et al., **The Education of American Businessmen** (New York: McGraw-Hill Co., 1959).

<sup>4</sup>On the basis of 1963 Graduate Record Examination scores the Department of Industrial Management averaged slightly higher than the University as a whole.

<sup>5</sup>This can best be seen noting the increasing number of top-grade graduate programs that require two semesters of calculus as an entrance prerequisite, e.g. Purdue and Cal. Tech.

<sup>6</sup>Many a department of business administration has initially attracted mathematically competent faculty only to have them leave upon discovering that the students did not have the background necessary for their courses.

---

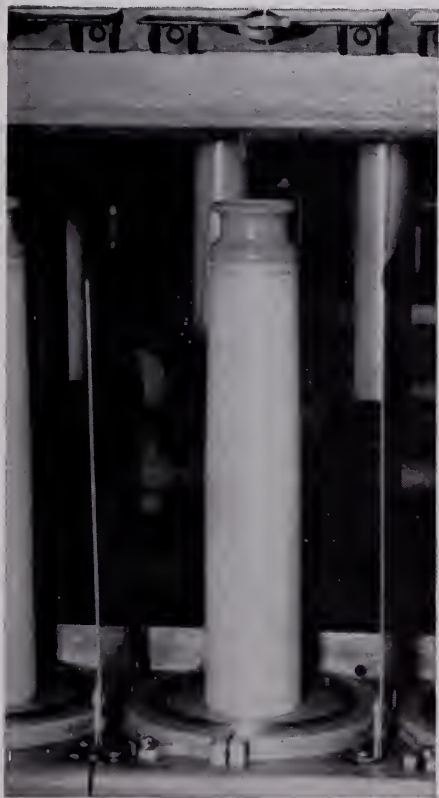
## J. E. SIRRINE COMPANY

*Engineers*  
Since 1902



GREENVILLE, SOUTH CAROLINA

# ***SONOCO leadership meets the challenge...***



## ***...economical, reusable plastic yarn carriers!***

In its never-ending quest for better and more economical yarn carriers, Sonoco has paced the industry in the development of plastic bobbins, spools and cones.

Typical of these plastic products are bobbins for glass fiber and other synthetic yarns. They possess great strength, dimensional stability and are custom-formed and finished to close tolerance in various grades of thermoplastic. Like all carriers in this category, they are suitable for repeated use.

With its 65 years of experience in yarn carriers, Sonoco is well qualified to assume leadership in exploring the application of plastics for this purpose. *Only Sonoco* has the necessary research and design facilities. For example, inexpensive product samples can be furnished for customer evaluation. Continuing research is being conducted in the area of plastic cones, with a variety of types currently undergoing tests in mills and in our laboratories.

The exhaustive research devoted to plastic carriers is typical of that which is part of *every* Sonoco product. For Sonoco customers it means economy and dependable performance. *Don't settle for less!*



*products for textiles*

**SONOCO PRODUCTS COMPANY, HARTSVILLE, SOUTH CAROLINA** • Akron, Ind. • Atlanta, Ga. • Fremont, Calif. • Holyoke, Mass. • Janesville, Wisc. • City of Industry, Calif. • Longview, Texas  
Lowell, Mass. • Mystic, Conn. • Philadelphia, Pa. • Phillipsburg, N. J. • Ravenna, Ohio • Richmond, Va. • Tacoma, Wash. • **MEXICO:** Mexico, D. F. • **CANADA:** Brantford and Toronto, Ont. • Montreal, Quebec

\*TRADEMARK 3964





Left to right: John Willis, secretary; Emory Poole, treasurer; Wesley Connelly, president; Gary O'Shields, vice-president.

## A. A. T. T. Activities

By

John Willis, T.S. '66

The student chapter of the American Association for Textile Technology at Clemson was organized to provide textile students with an early means of becoming associated with the organization of A.A.T.T. and to advance at the local level the aims and goals of the parent national association.

A.A.T.T. meets once a month and has varied programs such as guest speakers, films, and demonstrations. A.A.T.T. has had two outstanding lectures this year. On October 8 Mr. Herman Jones, Research Engineer for Saco-Lowell Shops, spoke on "The Spinning Mill of the Future." On December 3, Mr. Thomas D. Efland, Associate Dean of the School of Industrial Management and Textile Science of Clemson University, spoke on "The Hanover Textile Machinery Show and European Tour."

A.A.T.T. had two very beneficial field trips this year. The first trip, taken during the fall semester, included tours of the Gayley Mill at Marietta, S. C. and Judson Mill in Greenville, S. C. Both are Divisions of Deering Milliken, Inc. The second trip, taken during the second semester, included tours of the Beattie Plant of Woodside Mills at Fountain Inn, S. C. and the Magnolia Finishing Plant, a Division of

Pacolet Industries at Blacksburg, S. C. These field trips are most informative because they offer us practical examples of the principles and techniques that we are taught in class. They also offer us an opportunity to observe working conditions and ask questions about the policies and fringe benefits offered by our future employers.

At the A.A.T.T. meeting on Tuesday, April 14, there was an election of new officers. The officers are Wesley Connelly, Chairman; Gary O'Shields, Vice-Chairman; John Willis, Secretary; Emory Poole, Treasurer; Fred Hardee, Program Chairman; Wayne Reynolds, Publicity Chairman; and Gregory Catoe, Corresponding Secretary.

The A.A.T.T. activities for this year was concluded with a banquet at the Food Industries Auditorium on April 29th. Professor W. T. Zink of the Electrical Engineering Department was guest speaker.

As A.A.T.T. brings to a close another year of activities we can only say that we hope to come back this fall with renewed interest so that we can strive for a bigger and better program for our student chapter of A.A.T.T.



# THE NEED FOR EXPANDED TEXTILE RESEARCH

By: Thomas D. Efland

Associate Dean of the School of Industrial Management and Textile Science

In contrasting the filmy, gossamer, sheerness of a negligee for boudoir use with the bulky ruggedness of a space suit for astronaut use, an astute observer notes two things they have in common. The first of these is that both are end products of long and costly research programs, and second, they were both developed to help achieve a mission. The negligee's design intent is to stimulate emotions and expose the contents, while the space suit is to simulate an environment and protect the contents from exposure. Research on the first of these garments predates Cleopatra, while the necessity for the latter originated only a decade ago. The contrast between two such garments as these tends to show the extreme diversification of textile research.

Currently, research into materials for space is tending more and more into the fiber area. Solving the apparel problems of the astronaut is only one aspect of the program. As man ventures into space, he will not only need the hardware to get him up there, but he will also need structures to create an inhabitable environment. Since these structures will have to be transported in very small spaces, textile-type materials seem to be the answer. Very active programs are seeking fibrous materials that can withstand extreme temperatures. Configurations for fabric structures that can be expanded and made rigid after they are inserted into space seem to be the answer to space housing problems.

In the more prosaic area of wearing apparel, the emphasis is on stretch-type fabrics. Natural fibers are being chemically modified to give them the elasticity necessary to produce stretch garments. These fibers are augmented by the use of nylon and other man-made fibers in stretch fabrics. These fabrics which give comfort and fit to a garment are the culmination of extensive research programs extending back several years. They are but one item developed by a broad front of research for newer fabrics, better fabrics for old purposes and more economical means for producing them.

In emphasizing the need for a strong textile industry and the continued need for research, Senator Pastore, addressing the Eightieth Convocation at Philadelphia College of Textiles and Science, said, "Textile materials are second only to steel in importance to national defense." Clothing, like food, is essential for the soldiers in the field, but beyond that,

textile materials are important elements in much of his equipment and in his weapons.

To maintain an industry strong enough to supply military needs, as well as a broad consumer market, increasing research effort will be necessary. To assure the manpower for such an effort, graduate programs will have to be expended and more students with interest in textiles encouraged to enroll for advanced study.

## **Simmons Machinery Company, Inc.**

**EQUIPMENT — SUPPLIES — ACCESSORIES**

**— TEXTILE MACHINERY —**

**P. O. Box 202**

**Phone CEdar 9-7621**

**GREENVILLE, S. C.**

## **NOPCO CHEMICAL COMPANY**

**and its subsidiary**

## **JACQUES WOLF & COMPANY**

**Manufacturing A Full Line of  
Textile Processing Chemicals**

**60 PARK PLACE  
Newark, New Jersey**

# Outstanding



**WILLIAM T. DAVIDSON**

William Davidson, is a twenty-two year old Textile Management major from Avondale, North Carolina. Bill was the recipient of the Keever Starch Scholarship awarded to an outstanding junior or senior majoring in textiles. Bill is very active in campus life. He has been a member of the Taps Staff for three years; a member of Phi Psi, national honorary fraternity for textile students; Blue Key, national honorary fraternity; and Sigma Alpha Zeta, social fraternity.

After graduation, Bill plans to enter the Air Force for pilot training for five years.

**SPENCER BERNARD BATES**

Spencer Bernard Bates is a twenty-six year old Textile Chemistry major from Deerfield Beach, Florida. He is married and the proud father of two boys.

Spencer transferred to Clemson from Palm Beach Junior College in 1961. While at Clemson, he has been an active member of Phi Psi Honor Fraternity and the American Association of



Textile Chemists and Colorists. He received a Geigy Scholarship in his senior year to help defray some of his expenses.

During the summers, Spencer has worked for the Beacon Manufacturing Co. in the engineering office and for the Sjostrom Machine Co. as a sales engineer. After graduation, he will accept a position with American Cyanamide in the Creslan plant at Pensacola, Florida as a Development Engineer.

**WILLIAM TOM PACK**

William Tom Pack is a twenty-two year old Textile Science major from Inman, South Carolina.

While at Clemson, Tom has made a good record both in his studies as well as in other activities. He is a member of Phi Psi Honor Fraternity and is an outfielder on the baseball team.

To help with finances while at Clemson, Tom received the four year Inman Riverdale Foundation Scholarship. During the past four summers, he has gained valuable experience with the Inman Mills.

After graduation Tom plans to enter military service before accepting a position in industry.



**THE BOBBIN AND BEAKER**



# Seniors . . .

## ALEXANDER B. CREDLE, JR.

Alexander Credle is a twenty-two year old Industrial Management major from Poughkeepsie, New York.

Alex has been a member of the Student Senate his junior and senior years; a member of the Y.M.C.A., Presbyterian Student Association; Society for the Advancement of Management; Council of Club Presidents; Nu Epsilon social Fraternity; Blue Key and "Who's Who" in American Colleges and Universities. Alex served as president of the Y.M.C.A. his senior year, president of the PSA his junior year, and president of the CCP his senior year.

After graduation Alex plans to accept a position with Humble Oil Company.



## NORMAN F. PULLIAM

Norman Pulliam is a twenty-one year old Industrial Management major from August, Georgia. He has been an honor student for five semesters.

This year Norman is president of the Student Senate and Blue Key National Honor Fraternity; parliamentarian of Kappa Delta Chi; a member of Tiger Brotherhood; director of Tigerama; a member of the College traffic committee; listed in "Who's Who among Students" in American Colleges and Universities; and a



delegate to S. C. State Student Legislature. Last year Norman was secretary of the Student Senate; assistant director of Tigerama; and director of Junior Class Follies.

While at Clemson, Norman has received the **Wofford B. Camp Award** to the outstanding Blue Key member and the **Algernon Sydney Sullivan Award** for an outstanding member of the graduating class.

After graduation, Norman hopes to enter Harvard Business School for a Master's degree in September of '64 or '65.



## JERRY W. BLACKWOOD

Jerry W. Blackwood is a Textile Management major from Gaffney, South Carolina. He is twenty-two years old and is married. To aid with his college expenses he was awarded a Sonoco Products Scholarship for his last two semesters at Clemson.

For two summers Jerry gained valuable experience in the textile industry when he was employed by Gaffney Manufacturing Company, a mill in the Deering-Milliken chain.

While at Clemson, Jerry has been an active member of several campus organizations, and this year he has served as Editor of the Bobbin and Beaker, and vice-president of PHI PSI. He has also been a member of NT-MS, AATT, Council of Club Presidents, and the Student Senate. A participant of the Army ROTC Flight Program, he will report for three years active duty in November.

After graduation Jerry will work for Limestone Manufacturing Company, a division of M. Lowenstein & Sons, Inc. in Gaffney.



# Textile Chemistry Honor Students



George B. Sproles, Marshall White, Mac Harley

The Clemson College School of Industrial Management and Textile Science has recently established a series of Honors Courses to be offered to textile chemistry students of above average academic ability.

The Honors Courses are designed to give interested students an opportunity to undertake academic labors above and beyond those attempted by the average students. Although the honor courses have thus far necessitated greater preparation for classes and have often resulted in low quiz grades for the students in the program, the interest in this unique academic program has continued to increase.

The qualifications for taking Honors Courses are that an entering freshman show an interest in the program and have a predicted 3.0 or better G.P.R. For continuance in the program the student must maintain a 3.0 G.P.R.

In addition to taking Honors Courses in English, Physics, Chemistry, and Mathematics, Textile Chemistry honor students undertake advanced Honors Courses in organic chemistry, chemical processing of textile materials, and synthetic fibers.

Presently enrolled in the program are juniors George M. Sproles, of Silver Springs, Maryland and Marshall White, Jr., of Rock Hill; and freshman Richard Harley of Barnwell, S. C. These students feel that the extra time and effort that they put into the honors program will be beneficial to them in graduate school as well as in their later professional lives.

The Honors Program is coordinated by a college-wide Honors Council, of which Associate Professor Charles V. Wray of the School of Industrial Management and Textile Science is a member.



**LOOM REEDS**

**Greensboro Loom Reed Co., Inc.**

The  
**BEST** for  
**39**  
years



**James W. Bell**

**PROFESSIONAL PLACEMENT**

**P. O. Box 343**

**Groton, Mass.**

*Serving the Fibrous and Organic Materials  
Industries around the Country.*

**ALL POSITIONS COMPANY FEE PAID**



# Phi Psi

## News Notes

By  
Wesley Connelly, T.M. '65



Left to right, seated: Henry Poston, president; Gregory Catoe, vice-president. Standing: Marshall White, treasurer; Wesley Connelly, secretary.

During the year, the Iota Chapter of Phi Psi has initiated twelve new members. These new members were treated to a steak supper on January 6, together with the rest of the chapter.

The new members are Guy E. Ballard, Dennis L. Sauls, Richard A. Hiles, Charles D. Miller, Gregory B. Catoe, Henry M. Poston, Charles E. Fousek, W. Wesley Connelly, Frank B. Eaves, Bruce R. Edwards, Roy T. Ivester, and Albert T. Thompson.

Three recently chosen honorary members were the guests of honor at the annual spring banquet held on May 5. The three honorary members are Mr. M. Earl Heard, Jr., Vice-President in charge of International Sales for Saco-Lowell Shops; Dr. Wallace D. Trevillian, Dean of the School of Industrial Management and Textile Science and Head of the Industrial Management Department; and Mr. Thomas D. Efland, Assoc. Dean of the School of Industrial Management and Textile Science and Head of the Textile Research and Yarn Manufacturing Departments. The

initiation ceremony for these three new members was held in the Phi Psi room of Sirrine Hall just prior to the banquet.

The new officers for the 1964-65 school term were elected at the April 6 meeting. Henry Poston is Phi Psi's new president. He is a rising Senior from Johnsonville and is a Textile Management major. The newly-elected vice-president is Gregory Catoe from Kershaw. He is a Textile Management major. Secretary for next year is Wesley Connelly of Spartanburg. He is a rising Senior and majors in Textile Management. Marshall White of Rock Hill is the new treasurer. Marshall is a Textile Chemistry major and is a rising Senior.

The Iota Chapter sent three delegates to the national Phi Psi convention held in Newport, R. I. on May 1 and 2. While at the convention they had the opportunity to meet brothers from other chapters and learn of their activities.

# Professor Lindsay Retires

By

Marshall White, Jr., T. C. '65



As we approach the close of another academic year, Clemson University will lose the services of Professor Joseph Lindsay, Jr. Professor Lindsay has announced that he will retire after twenty-nine years of faithful service to Clemson students.

Joseph Lindsay, Jr. was born on October 31, 1898 in Chester, South Carolina. He attended the Chester elementary schools and was graduated from Chester High School. After receiving his A.B. degree from Erskine College in 1919, he attended the Philadelphia Textile School for a year. In 1945 he received his M. S. degree from the University of Tennessee.

For almost ten years Mr. Lindsay was the Head of the General Dyestuff Laboratory in Charlotte, North Carolina. In 1935 he came to Clemson as the Head of the Textile Chemistry and Dyeing Department, the position he has held ever since. While here at Clemson he has done numerous research projects. These include research in bleaching, dyeing of cotton and synthetic fibers, stretch cotton yarn, and in increasing luster and strength of cotton yarn.

Professor Lindsay is a member of the American Association of Textile Chemists and Colorists. He has also acted as advisor for the Clemson student chapter of the American Association of Textile Chemists and Colorists. He is a member of the Y.M.-C.A. Advisory Board; an elder in the Presbyterian Church; and a director of the Fort Hill Savings and Loan Company.

Mr Lindsay was married to Bertha Pressly of Due West, South Carolina in 1928. They have one son,

Joseph Lindsay, III, who was graduated from Clemson in 1954. He is now an M.D. in Atlanta, Georgia, specializing in internal medicine. Mr. Lindsay is also very proud of his two grandchildren.

After retirement Professor Lindsay will do consultant and research work in the field of textile chemistry. He also hopes to do his share of good fishing.

We can not go into all the many achievements of a man such as Professor Lindsay, for it would take many more pages. For a life such as his, spent in dedication and service to students and friends, we say thank you. The staff of the Bobbin and Beaker and the faculty and students of the School of Industrial Management and Textile Science wish you, Professor Lindsay, the best of luck and the best of fishing.

## INDUSTRIAL ENGINEERS

- NEW MILL PLANNING • MODERNIZATION PROGRAMS
- PLANT LAYOUTS • COST SYSTEMS
- COST REDUCTION REPORTS • WORK LOAD STUDIES
- MANAGEMENT PROBLEMS • SPECIAL REPORTS

### RALPH E. LOPER CO.

GREENVILLE, S. C., Dial CEDar 2-3868 (Area Code 803)  
FALL RIVER, MASS., Dial OSborne 6-8261 (Area Code 617)  
SPECIALIZING IN TEXTILES SINCE 1914



# **N** **FRANK G. NORTH** *Manufacturing Chemists* INCORPORATED

## — TEXTILE SIZES AND SOFTENERS —

SUPERIOR NORTH RESEARCH brings you the highest quality sizing products.

- WEAVE-WELL
- S-SIZE
- S-BIND
- GREASE-RITE
- TY-RITE

Our staff of chemists, sales engineers, and technical service men — always available for service, and ready and eager to uphold our long record for quick and efficient handling of emergency situations.

**FRANK G. NORTH, INCORPORATED**

Atlanta, Georgia  
Box 10573

Marietta, Georgia  
Box 769



## SOLVING THORNY PROBLEMS LEADS TO BEAUTIFUL RESULTS

Problems are welcomed in laboratories of Burlington, where hundreds are dedicated to progress — through research and development. Their special talents and skills, bring forth new and better textiles . . . apparel and home furnishing fabrics that help iron themselves, tenting fabrics that breathe, clothes that stretch to fit, sheer hosiery with longer wear . . . and many more . . . at prices that also fit. Yes, with Burlington, the thorniest problems often lead to beautiful results!

**Burlington** INDUSTRIES, INC. 



Seated: Ken Stovall, vice-president; Jim Jensen, treasurer.  
Standing: Henry Milam, president; James Smith, recording  
secretary; Lock Hyatt, corresponding secretary.

# The Industrial Management Society

By

Jim Jensen, I.M. '66

The Industrial Management Society has again enjoyed another year full of informative and technical information furnished by the range of guest speakers who have spoken to us this year. We have been fortunate to have such men as Mr. Holloway, Personnel Director of Singer Mfg. Company; Dr. Hugh Macaulay, Jr., Dean of the Graduate School; and Mr. Davis, Personnel Manager of Duke Power to head up these informative sessions.

The Club has taken several field trips this year visiting the Tru-Temper Corporation, Singer Mfg. Company, and perhaps the highlights of the year, the annual trip to Atlanta visiting the Federal Reserve Bank followed by lunch at the bank and then a tour of Carling's Brewery in the afternoon.

Each year the members of I.M.S. hold an informal banquet which provides the main social activity for

the year. This year the banquet was held at Bolton's and it was an immediate success from the social hour to the steak dinner which followed. A banquet of this nature is planned for the first part of the coming semester giving the old and new members a chance to get acquainted.

Newly elected officers for the coming year are Millon Plyler, President; James Smith, Vice-President; Jim Jensen, Secretary; Bobby Partridge, Treasurer; and Butch Moss, Historian.

Any person who is interested in management and would like to gain an insight in how management functions in all industries on a daily basis is cordially invited to attend the meetings which are held on the first and third Tuesday of every month at 7:30 P.M.

# S A M Hi-Lights

By  
James Smith, I.M. '65



Left to right: Bobby Partridge, treasurer; Jim Jensen, secretary; James Smith, vice-president; Millon Plyler, president.

The Clemson Chapter of the Society for the Advancement of Management is one of over 211 student chapters of this national professional organization of managers in industry, commerce, government, and education. The immediate objectives of S.A.M. are "to bring together executives in business and students preparing to go into business; to serve as an effective medium for the exchange and distribution of information on the problems, policies, and methods of management and industry; and to provide students with the opportunity to participate in the organizing, planning, directing and controlling of the activities of an organization dedicated to the promotion and advancement of the art and science of management."

S.A.M. strives to accomplish its objectives through interesting and informative programs, enjoyable social activities such as its annual banquet, trips to local commercial and industrial establishments, and by giving every member an opportunity to further his personal development through active participation

in the functions of the club. Any person who desires to contribute his time and efforts can certainly find a place to do so in S.A.M.

One function of S.A.M. that we feel is a direct contribution to the entire student body at Clemson is our annual Career Day Program. The Program consists of bringing in representatives of about twenty employment areas with which Clemson graduates might find good opportunities to pursue their life's work to talk with any student interested in that special field. This program can definitely be of value to any student who participates.

Through trips to the various firms in this area members gain an understanding of the operation of the firms and have a chance to meet and talk to business leaders in the area. Some of the trips S.A.M. has taken in the past were tours of the Jantzen facilities in Seneca, the Dunlop Plant in Westminster, the Buick-Oldsmobile-Pontiac Division of General Motors Corporation in Doraville, Georgia, and the True Temper Corporation in Anderson.

In April of this year S.A.M. took a trip to Atlanta as guests of the Federal Reserve Bank and Carlings Brewery.

Through our bi-monthly programs S.A.M. members are given opportunity to hear the views of and to meet many top business people. Some of the outstanding past speakers were: Mr. Charlie Johnson, Personnel Director of Judson Mills, Deering Milliken Company; Professor Harold Fischer, President of the University Division of the Society for the Advancement of Management; Mr. James Hoyt, President of Greenville Senior Chapter of S.A.M.; Mr. E. J. Kehler of the Ladies Garment Workers Union and Mr. James F. Gallivan, a stock and securities broker from Greenville.

S.A.M. has recently selected officers for the coming year. These are President, Henry Milam; Vice President, Ken Stovall; Corresponding Secretary, Lock Hyatt; Recording Secretary, James Smith; and Treasurer, Jim Jensen. The goal of these officers is to make the Clemson Chapter of S.A.M. one of the top student chapters in the nation through a large active membership and good planning.

One of the possible future activities of S.A.M. is the publication of a News Letter. One can easily see the opportunity for valuable experience for members interested in this publication.

It has been the purpose of this article to tell you what S.A.M. is, what it does, and why you should join it. See you at the meetings on the second and fourth Tuesday nights of each month at 7:30 in Sirrine Auditorium.





Left to right: Bruce Edwards, vice-president; Charles Miller, president; Mac Harley, secretary; Glenn Link, treasurer.



Left to right: Michael R. Prater, Mr. Joseph Lindsay, Mr. John Thompson.

# A Year With A. A. T. C. C.

By  
Mac Harley, T.C. '67

For the student chapter of the American Association of Textile Chemists and Colorists of Clemson University, the school year of 1963-64 has brought much progress. A rather informal club exclusively for Textile Chemistry majors, the A.A.T.C.C. made several notable advances this past year. A new sign was constructed to inform members of meeting times. A group picture was made for **Taps** for the first time. Refreshments were furnished at many of the meetings.

One of the chief functions of A.A.T.C.C. is to take textile chemistry majors to various mills and finishing plants in the area around Clemson. This past year the club went to Utica-Mohawk on Lake Hartwell; Magnolia Finishing Plant, a Pacolet Industries plant in Blacksburg, S. C.; and Cranston Printworks in Fletcher, N. C. These trips were very beneficial to club members and added a great deal to the school year.

On November 26, 1963, the A.A.T.C.C. held its annual fall banquet. Speaker for this occasion was Mr. Chester Culver, of Clemson, who is with the Goodrich Chemical Corporation. The annual spring banquet is set for May 7, 1964.

Officers for this past year were as follows: president—Randy Prater from Seneca; vice-president—

Bill Hawfield, Lancaster, who was succeeded by Jack Neeley, Spartanburg, at mid-term; secretary—Charles Funderburke, Rock Hill; and treasurer—Robert Fulmer, Leesville. Officers elected for the 1964-65 school year are Charles Miller, president, from York; Bruce Edwards, vice-president, from Tryon, N. C.; Mac Harley, secretary, from Barnwell; and Glenn Link, treasurer, from Cherryville, N. C. The new officers are to be installed at the spring banquet.

On Thursday, May 7, the A.A.T.C.C. held its annual spring banquet. This was a special gathering in that Mr. Joseph Lindsay, retiring head of the Textile Chemistry and Dyeing Departments, was honored. The A.A.T.C.C. presented him with an engraved silver revere bowl and established an award in his name. This prize, the Mr. Joseph Lindsay Award, is to consist of the inscription of the name of the most outstanding graduating senior in textile chemistry beginning with the school year 1964-65.

The banquet speaker was Mr. John Thompson, who lives in Clemson and is the area representative for BASF Chemical Corporation of Charlotte. He spoke on the dyeing of polyester blends, chiefly dacron and cotton. He spoke of BASF's Thermosol process of dyeing. The last topic he dwelled upon was the dyeing of poly-propylene fibers with dyes from BASF.

Compliments of

*Abbott Machine  
Company, Inc.*

WILTON, NEW HAMPSHIRE

Southern Office: Greenville, S. C.

Manufacturers of Textile Winding Machinery

**ATLANTIC  
CHEMICAL CORPORATION**

10 Kingsland Road

—

Nutley, New Jersey

Manufacturers of  
COAL-TAR INTERMEDIATES  
and  
DYESTUFFS

## Index to Advertisers

Abbott Machine Company, Inc. ....	21
Atlantic Chemical Corp. ....	21
Burlington Industries, Inc. ....	17
Frank G. North, Inc. ....	17
Gaston County Dyeing Machine Co. ....	23
Greensboro Loom Reed Co., Inc. ....	14
J. E. Sirrine Company ....	8
NOPCO Chemical Company ....	11
Pioneer Heddle & Reed Company, Inc. ....	24
Professional Placement ....	14
Ralph E. Loper Company ....	16
Royce Chemical Company ....	4
Simmons Machinery Company, Inc. ....	11
Sonoco Products Company ....	9
Steel Heddle Manufacturing Co. ....	22
Whitin Machine Works ....	2

# Stehedco THE QUALITY LINE

## The World's Most Complete Line of TEXTILE WEAVING SUPPLIES

You must have the best quality equipment of the most advanced design to produce the finest quality fabrics consistently and with true operating economy.

Every Stehedco Product is quality engineered to weave perfect fabrics most economically and with least possible down time or replacements.

Remember Stehedco for quality and perfection. Ask at any time to have one of our qualified Sales Engineers help you to solve your problems.

## STEEL HEDDLE MFG. CO.

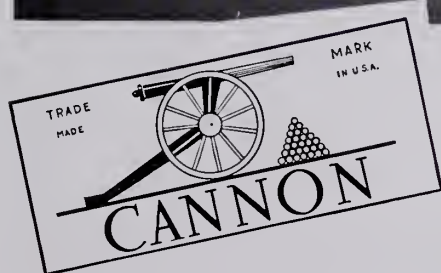
PHILADELPHIA 32, PENNSYLVANIA

Greenville, South Carolina—Greensboro, N. C.—Atlanta, Ga.  
Lawrence, Mass.—Granby, Quebec, Canada—Textile  
Supply Co., Dallas, Texas—Albert R. Breen, Chicago, Illinois.

A-6301







## ***Rugged Individualism at It's Best***

The vast Cannon Textile empire didn't just happen. It is the result of basic policy decisions and firm, steady direction by the Cannon family through the years.

The earnings record, one of the best in the industry, is ample proof that the decisions were right most of the time.

The Cannon name is usually associated with towels, sheets and pillow cases, but the company is also a large producer of ladies hosiery, bedspreads and natural as well as dyed sales yarn.



## **Gaston County Dyeing Machine Co.**

**WORLD'S LARGEST PRODUCERS OF PRESSURE DYEING & DRYING MACHINERY  
STANLEY, N. C., U.S.A.**

### **REPRESENTATIVES**

**G. Lindner**  
Terminal Bldg., 68 Hudson St.  
Hoboken, N. J.

**Albert Beglan**  
316 Spencer St.  
Philadelphia 20, Pa.

**J. R. Angel**  
1104 Mortgage Guarantee Bldg.  
Atlanta 3, Ga.

**A. R. Breen**  
80 E. Jackson Blvd.  
Chicago, Ill.

**The Rudel Machinery Co., Ltd.**  
980 St. Antoine St., Montreal  
278 Lakeshore Blvd. E., Toronto

# THE BOBBIN AND BEAKER

Student Publication

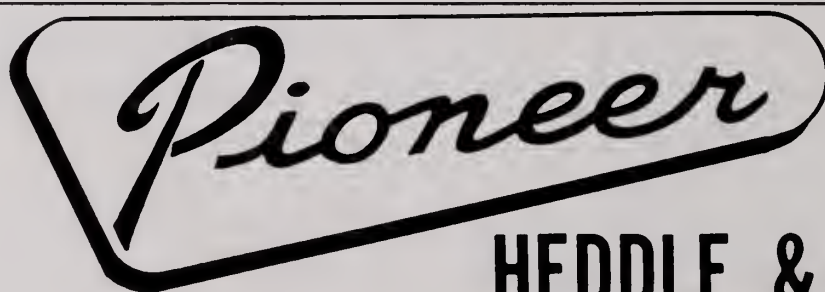
School of Industrial Management and Textile Science

Clemson College

CLEMSON, SOUTH CAROLINA

NON PROFIT ORGANIZATION  
BULK RATE  
U. S. POSTAGE  
PAID  
CLEMSON, S. C.  
PERMIT NO. 7

Return Requested



## HEDDLE & REED CO.

PIONEER —  
SERVING THE TEXTILE INDUSTRY—QUALITY PRODUCTS—EXCELLENT SERVICE

DRAW-RITE FRAMES AND HEDDLES  
CONVENTIONAL FRAMES AND HEDDLES  
PITCH BAND REEDS  
DURAFLEX REEDS  
DROP WIRES  
ACCESSORIES

A southern manufacturer — prompt delivery — Full staff of Sales engineers at your service.

PIONEER HEDDLE AND REED CO., INC.  
P. O. Box 10586, Atlanta, Georgia